ABSTRACT OF THE DISCLOSURE

A communication receiver amplifies a pulse-amplitude-modulated (PAM) signal representing an integer-valued sequence of first data elements (D1) with an adjustable first gain (G1) and digitizes the amplified signal to produce a sequence of second data elements (D2) representing successive magnitudes of the PAM signal. A first automatic gain control (AGC) circuit determines the rate at which magnitudes of the second data sequence elements fall within a first range and adjusts G1 to maintain that rate within a second range. Digital signal processing circuits within the receiver process the second data to produce a sequence of third data elements (D3), each having a real number value substantially equal to a product of a second gain G2 and a corresponding one of the first data elements D1. A slicer rounds the real number represented by each third data sequence element to produce a corresponding integer-valued element of a fourth data sequence (D4). A second AGC circuit adjusts the second gain based on a combination of a sign of each fourth sequence element and a sign of a difference between corresponding third and fourth data sequence elements to keep each third data element as close as possible in value to its corresponding first data element.